

November 20, 2002
Project No. 0081300-04



345492

SEPTEMBER 2002 GROUNDWATER MONITORING REPORT

**Yeoman Creek Landfill Superfund Site
Waukegan, Illinois**

Prepared For:

**Mr. John Seymour, P.E.
YRCG Project Coordinator
GeoSyntec Consultants
55 W. Wacker Drive, Suite 1100
Chicago, Illinois 60601**

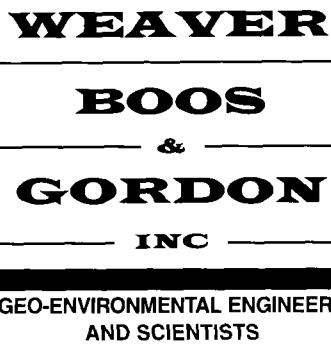
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November 20, 2002
File 0081300-04

Mr. John Seymour, P.E.
YCRG Project Coordinator
GeoSyntec Consultants
55 W. Wacker Drive, Suite 1100
Chicago, IL 60601

Subject: September 2002 Groundwater Monitoring Report
Yeoman Creek Landfill Superfund Site
Waukegan, Illinois

Dear Mr. Seymour:

Weaver Boos & Gordon, Inc. (Weaver Boos), sub-consultant to TJ Lambrecht Construction, Inc., has completed the above referenced monitoring for the Yeoman Creek Landfill Superfund Site located in Waukegan, Illinois. The Yeoman Creek Superfund Site (YCS Site) includes Yeoman Creek Landfill, Edwards Field Landfill, and Rubloff Landfill.

September 2002 Monitoring Event

Weaver Boos was represented at the YCS Site to conduct the necessary fieldwork to collect field parameters for groundwater and leachate samples and groundwater level measurements from September 17, 2002 to September 20, 2002. The subject monitoring event included a total of 72 monitoring locations as follows: 41 groundwater wells, 3 leachate wells, and 28 landfill gas probes (see **Figure 1**). A summary of the September 2002 Monitoring Event is provided as **Table 1**. Pursuant to United States Environmental Protection Agency (USEPA) Correspondence dated May 30, 2002, only field parameters and groundwater elevation measurements were obtained during this event. Groundwater elevation measurements were collected from all 72 monitoring locations, and field parameters were collected from 41 groundwater wells and 3 leachate wells.

Field work was performed in accordance with the site specific Field Sampling Plan (FSP) prepared by GeoSyntec Consultants, dated August 2001, and the Pre-Design Data Collection Activities Quality Assurance Project Plan (QAPjP) prepared by Parsons Engineering Sciences, Inc. dated August 1999.

A representative from R.F. Weston was present on-site to oversee sampling activities on behalf of the USEPA.

Groundwater and Leachate Sampling

Depth to groundwater measurements were taken over a two-day period at the beginning of the sampling event, prior to purging any of the wells so as to obtain measurements that would provide an accurate representation of the groundwater and leachate flow in the vicinity of the site (see **Table 2**).

The wells were purged with dedicated tubing and a peristaltic pump using a low-flow technique. A flow through cell was used to measure pH, temperature, conductivity, dissolved oxygen, and oxidation-reduction potential. Turbidity was measured using a separate turbidity meter. A colorimeter and mixing agents were used to field test for ferrous iron in accordance with the FSP. The field measurements collected from each well and are included on **Table 3**.

Field parameters were collected from 21 Shallow Zone monitoring wells, 19 Lower Outwash monitoring wells, 1 bedrock well, and 3 leachate monitoring wells (See **Table 1**). Field parameters were analyzed for field pH, specific conductivity, dissolved oxygen, ferrous iron, temperature, turbidity, and oxidation-reduction potential.

Potentiometric Surface Maps

The depth to groundwater data from the wells screened within the lower outwash was used to generate a groundwater potentiometric surface map. As shown on **Figure 2**, groundwater flow for the lower outwash is towards the east. The depth to groundwater data from the leachate wells and the landfill gas probes was used to create **Figure 3** (Potentiometric Surface Map for Leachate Wells). The leachate contours at Edwards Field show a leachate gradient extending to the west and northwest. Note that numerous landfill gas probes were dry in September 2002, which are likely a result of seasonal fluctuation.

We trust that this information is sufficient for your needs at this time. If you have any questions, comments, or suggestions regarding the data presented in this groundwater report, please contact us at your convenience.

Very truly yours,

Weaver Boos & Gordon, Inc.



Amy M. Powers
Project Geologist



Michael B. Maxwell, LPG
Project Manager

Attachments: Tables
Figures

Tables

Table 1
Summary of Quarterly Monitoring - September 2002
Yeoman Creek Landfill
Waukegan, Illinois

Sample Description	Water Levels	Field Parameters
<i>Groundwater Monitoring Wells</i>		
MW-101	X	X
MW-102	X	X
MW-103	X	X
MW-104	X	X
MW-105	X	X
MW-106	X	X
MW-107	X	X
MW-108	X	X
MW-109	X	X
MW-110	X	X
MW-111	X	X
MW-201	X	X
MW-202	X	X
MW-203	X	X
MW-204	X	X
MW-205	X	X
MW-206	X	X
MW-207	X	X
MW-208	X	X
MW-209	X	X
MW-210	X	X
MW-211	X	X
MW-212	X	X
MW-213	X	X
MW-214	X	X
MW-215	X	X
MW-216	X	X
MW-301	X	X
MW-401	X	X
MW-402	X	X
MW-403	X	X
MW-405	X	X
MW-406	X	X
MW-A	X	X
MW-B	X	X
MW-C	X	X
MW-D	X	X
MW-E1	X	X
MW-E2	X	X
MW-F	X	X
MW-G	X	X
<i>Leachate Monitoring Wells</i>		
LW-101	X	X
LW-102	X	X
LW-103	X	X

Table 1
Summary of Quarterly Monitoring - September 2002
Yeoman Creek Landfill
Waukegan, Illinois

Sample Description	Water Levels	Field Parameters
<i>Landfill Gas Probes</i>		
LFG-101	X	
LFG-102	X	
LFG-103	X	
LFG-104	X	
LFG-105	X	
LFG-106	X	
LFG-107	X	
LFG-108	X	
LFG-109	X	
LFG-110	X	
LFG-111	X	
LFG-201	X	
LFG-202	X	
LFG-203	X	
LFG-204	X	
LFG-205	X	
LFG-206	X	
LFG-207	X	
LFG-208	X	
LFG-211	X	
LFG-216	X	
LFG-218	X	
LFG-219	X	
LFG-220	X	
LFG-221	X	
LFG-222	X	
LFG-223	X	
LFG-224	X	

Table 2
Summary of Groundwater Elevations
September 2002 Groundwater Monitoring Event
Yeoman Creek Landfill
Waukegan, Illinois

Location ID	Top of PVC* (MSL)	Total Well Depth* (feet)	Depth to Water 09-02 (feet)	Groundwater Elevation 09-02 (MSL)
Shallow Zone Wells				
<i>Lacustrine Clays, Organics, Sand Lenses</i>				
MW-204	662.45	22.67	17.28	645.17
MW-206	663.75	21.83	10.21	653.54
MW-208	659.31	21.31	10.36	648.95
MW-402	657.25	20.28	5.21	652.04
<i>Fluviolacustrine Sands</i>				
MW-102	653.53	23.77	8.03	645.50
MW-104	652.53	25.30	7.11	645.42
MW-106	654.96	20.26	7.77	647.19
MW-107	656.46	21.59	10.94	645.52
MW-108	654.59	25.22	9.12	645.47
MW-110	653.18	25.25	7.90	645.28
MW-111	655.64	25.27	10.08	645.56
MW-202	660.01	27.82	10.21	649.80
MW-210	651.81	26.15	5.83	645.98
MW-211	658.81	41.93	13.15	645.66
MW-212	658.87	18.79	13.23	645.64
MW-214	653.54	24.29	7.04	646.50
MW-215	654.80	20.27	5.49	649.31
MW-216	657.47	24.77	11.95	645.52
<i>Upper Outwash</i>				
MW-406	661.19	32.91	18.72	642.47
MW-E1	664.75	33.81	21.97	642.78
MW-G	664.96	24.63	8.19	656.77

* - Top of PVC Elevations for groundwater wells provided by Parsons Engineering Sciences, Inc.

Table 2
Summary of Groundwater Elevations
September 2002 Groundwater Monitoring Event
Yeoman Creek Landfill
Waukegan, Illinois

Location ID	Top of PVC* (MSL)	Total Well Depth* (feet)	Depth to Water 09-02 (feet)	Groundwater Elevation 09-02 (MSL)
Lower Outwash Wells				
MW-101	653.63	40.25	8.20	645.43
MW-103	652.19	50.28	6.83	645.36
MW-105	654.79	45.37	9.29	645.50
MW-109	653.49	64.59	9.88	643.61
MW-201	659.80	57.36	14.48	645.32
MW-203	663.00	68.51	20.41	642.59
MW-205	664.13	74.55	21.20	642.93
MW-207	658.50	47.02	15.68	642.82
MW-209	651.75	46.91	6.33	645.42
MW-213	653.89	47.11	8.45	645.44
MW-301	678.74	45.36	22.45	656.29
MW-401	657.53	60.77	14.70	642.83
MW-405	661.82	62.94	19.42	642.40
MW-A	655.54	50.18	10.11	645.43
MW-B	654.49	58.74	8.81	645.68
MW-C	655.31	49.51	11.51	643.80
MW-D	655.33	36.96	9.73	645.60
MW-E2	664.71	53.92	22.22	642.49
MW-F	660.30	43.27	17.94	642.36
Bedrock Well				
MW-403	657.63	174.75	>101	<556.63
Leachate Wells				
LW-101	655.70	15.09	9.67	646.03
LW-102	656.94	13.31	9.54	647.40
LW-103	654.93	15.11	7.09	647.84

* - Top of PVC Elevations for groundwater wells provided by Parsons Engineering Sciences, Inc.

Table 2
Summary of Groundwater Elevations
September 2002 Groundwater Monitoring Event
Yeoman Creek Landfill
Waukegan, Illinois

Location ID	Top of PVC* (MSL)	Total Well Depth* (feet)	Depth to Water 09-02 (feet)	Groundwater Elevation 09-02 (MSL)
Landfill Gas Probes				
LFG-101	652.77	10.03	8.95	643.82
LFG-102	654.01	10.13	7.53	646.48
LFG-103	655.37	10.13	DRY	<645.24
LFG-104	654.23	10.15	DRY	<644.08
LFG-105	654.55	8.85	DRY	<645.70
LFG-106	653.93	9.06	DRY	<644.87
LFG-107	652.64	5.54	DRY	<647.10
LFG-108	654.44	9.24	DRY	<645.20
LFG-109	652.39	7.68	6.62	645.77
LFG-110	652.19	9.92	DRY	<642.27
LFG-111	654.01	10.22	DRY	<643.79
LFG-201	660.68	8.24	DRY	<652.44
LFG-202	662.33	9.98	5.78	656.55
LFG-203	663.76	10.06	DRY	<653.70
LFG-204	658.34	10.33	5.86	652.48
LFG-205	656.72	10.28	9.98	646.74
LFG-206	659.46	10.35	DRY	<649.11
LFG-207	657.02	10.32	9.29	647.73
LFG-208	657.80	10.12	DRY	<647.68
LFG-211	660.81	7.48	4.81	656.00
LFG-216	656.62	10.20	6.43	650.19
LFG-218	662.19	6.73	DRY	<655.46
LFG-219	661.83	10.10	DRY	<651.73
LFG-220	660.32	10.16	DRY	<650.16
LFG-221	660.04	10.21	DRY	<649.83
LFG-222	663.38	7.87	DRY	<655.51
LFG-223	660.83	9.82	8.86	651.97
LFG-224	665.28	9.97	DRY	<655.31

* - Top of PVC Elevations for groundwater wells provided by Parsons Engineering Sciences, Inc.

Table 3
Summary of Analytical Results
September 2002 Groundwater Monitoring Event
Yeoman Creek Landfill
Waukegan, Illinois

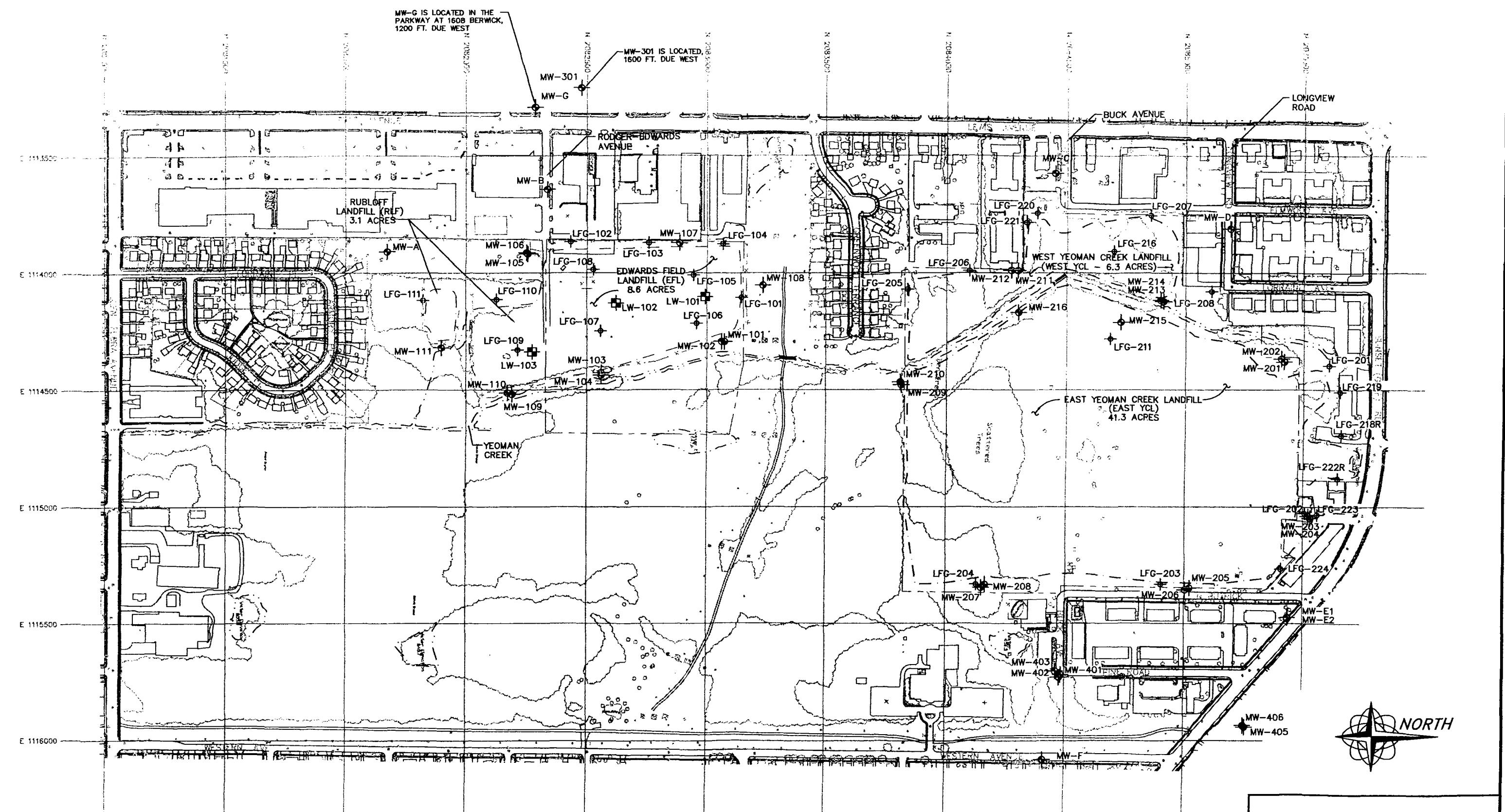
Parameter Name	Units	35 IAC 620.410 Class I Standard	Federal MCL	MW-101	MW-102	MW-103	MW-104	MW-105	MW-106	MW-107	MW-108	MW-109	MW-110	MW-111	MW-201	MW-202	MW-203	MW-204	MW-205
Parameter Name	Units	35 IAC 620.410 Class I Standard	Federal MCL	LO	SZ	LO	LO	LO	LO	LO									
<i>Field Parameters</i>																			
Dissolved Oxygen	mg/L	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.51	0.00	0.00	0.00	0.00	0.00	
Ferrous Iron	ppm	NA	NA	0.38	7.56	0.56	4.74	0.90	8.68	2.77	1.36	2.25	7.70	7.24	0.04	9.76	0.34	1.33	
pH	s.u.	6.5-9.0	NA	6.61	6.57	6.79	6.54	6.65	6.03	6.57	6.54	6.35	6.59	6.42	6.36	6.99	6.96	6.46	
Redox Potential	mV	NA	NA	-77	-124	-181	-139	-44	-108	-133	-88	-107	-110	-98	-5	-9.7	-98	-102	
Specific Conductivity	umhos	NA	NA	1860	1770	1600	3440	1520	2780	1360	928	1800	2210	2060	2330	6980	693	-99	
Temperature	deg. C	NA	NA	12.82	15.10	14.08	12.97	14.42	14.08	12.97	12.43	14.02	14.19	13.22	13.78	14.56	15.50	12.60	
Turbidity	ntu	NA	NA	9.96	3.64	6.51	2.75	7.57	10.20	16.00	5.74	3.46	8.03	3.96	3.89	3.05	5.71	3.56	
<i>Field Parameters</i>																			
Dissolved Oxygen	mg/L	NA	NA	0.00	0.00	0.07	3.10	0.00	3.10	4.75	0.40	1.49	15.88	0.00	0.00	0.00	0.00	3.08	
Ferrous Iron	ppm	NA	NA	3.51	6.20	13.48	0.20	4.92	12.32	3.85	4.18	1.57	4.95	15.92	1.05	3.72	3.38	0.51	
pH	s.u.	6.5-9.0	NA	6.46	6.68	6.69	6.40	6.40	6.99	7.11	6.43	6.35	6.37	6.33	6.30	6.72	6.69	7.05	
Redox Potential	mV	NA	NA	-153	-107	-106	-16	-134	-111	-111	-106	-112	-112	-112	-111	-105	-89	-18	
Specific Conductivity	umhos	NA	NA	3520	1980	1500	1480	2100	1660	1280	2170	1650	7780	1720	267	1910	2420	738	
Temperature	deg. C	NA	NA	14.34	13.26	16.87	12.63	12.63	16.02	18.14	13.42	13.22	13.22	14.66	12.92	12.84	12.95	14.13	
Turbidity	ntu	NA	NA	7.67	3.42	2.78	23.20	2.05	3.17	5.75	2.78	8.01	2.11	10.30	44.90	4.30	5.41	NS	
<i>Field Parameters</i>																			
Dissolved Oxygen	mg/L	NA	NA	0.00	0.00	0.43	0.30	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	
Ferrous Iron	ppm	NA	NA	4.08	0.95	0.54	3.61	3.50	0.94	0.62	4.86	1.88	14.24	1.88	14.24	12.12	25.76	25.76	
pH	s.u.	6.5-9.0	NA	6.76	6.68	6.66	6.46	6.44	6.27	6.44	7.71	5.73	6.34	6.34	6.34	6.34	6.34	6.34	
Redox Potential	mV	NA	NA	-93	-34	-121	-131	-137	-92	-48	-12	-159	-121	-121	-121	-133	-127	-127	
Specific Conductivity	umhos	NA	NA	2540	1180	716	940	2300	2520	606	2760	768	2190	2360	3370	3370	3370	3370	
Temperature	deg. C	NA	NA	14.97	15.10	17.23	15.97	15.16	14.08	14.35	17.18	15.66	14.20	16.42	17.88	17.88	17.88	17.88	
Turbidity	ntu	NA	NA	3.75	39.90	30.60	489	3.83	205.00	29.30	33.40	24.40	5.59	9.59	14.30	17.70	17.70	17.70	

Notes:
Exceedance of 35 IAC 620.410 Class 1 Standards indicated by 0.43

0.43

NA - Not Applicable
NS - Not Sampled
LO - Lower Outwash
SZ - Shallow Zone

Figures



LEGEND

— — — APPROXIMATE LIMIT OF WASTE	— — — APPROXIMATE PROPERTY LINE
— — — GROUNDWATER MONITORING WELL	— — — TREE LINE
— — — LEACHATE WELL	— — — EXISTING ROAD
— — — GAS PROBE	— — — EXISTING TREE
— — — SURFACE WATER	— — — HOUSE OR STRUCTURE
— — —	— — — SIDEWALK
— — —	— — — EXISTING FENCE

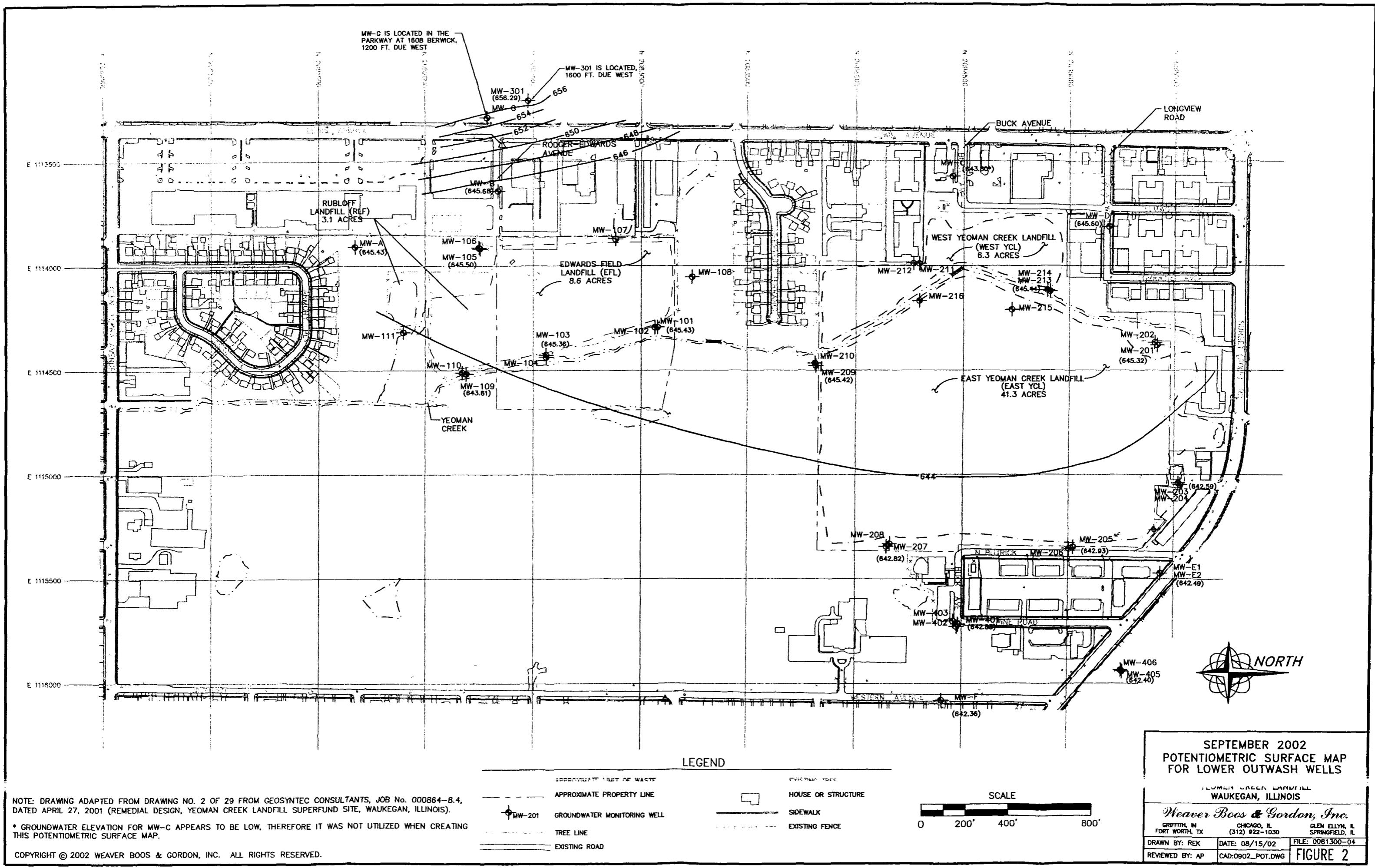
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0 200' 400' 800'

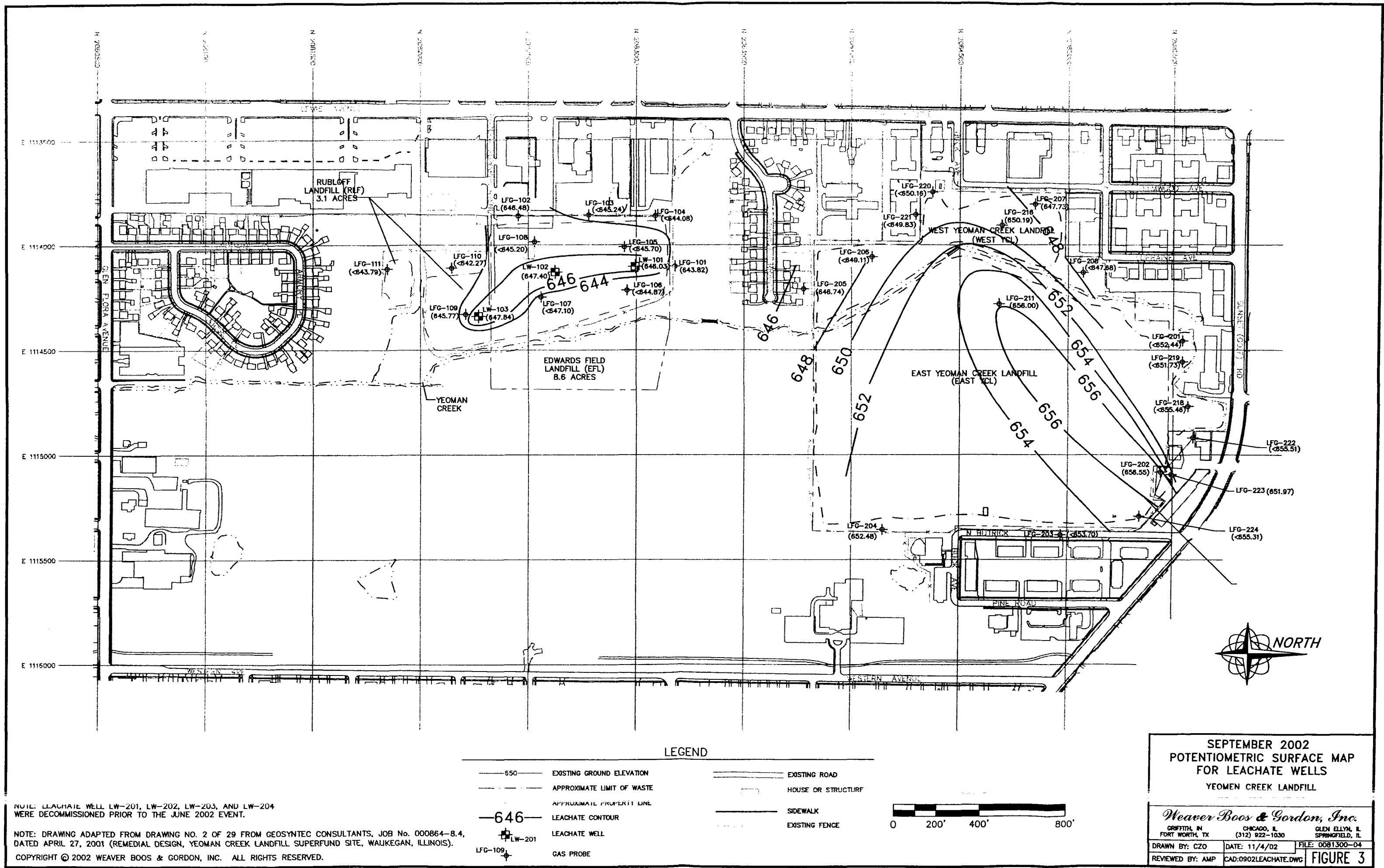
MONITORING POINT LOCATIONS	
WEYOMEN CREEK LANDFILL	WAUKEGAN, ILLINOIS
Weaver Boos & Gordon, Inc.	GRIFFITH, IN CHICAGO, IL ALBUQUERQUE, NM (312) 922-1030 GLEN ELLYN, IL SPRINGFIELD, IL
DRAWN BY: REK	DATE: 08/15/02 FILE: 0081300-04
REVIEWED BY: AP	CAD:LOCATIONS.DWG FIGURE 1

NOTE: LEACHATE WELL LW-201, LW-202, LW-203, AND LW-204 WERE DECOMMISSIONED PRIOR TO THE JUNE 2002 EVENT.

NOTE: DRAWING ADAPTED FROM DRAWING NO. 2 OF 29 FROM GEOSYNTEC CONSULTANTS, JOB NO. 000864-8.4, DATED APRIL 27, 2001 (REMEDIATION DESIGN, YEOMAN CREEK LANDFILL SUPERFUND SITE, WAUKEGAN, ILLINOIS).

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Submittal No. _____
Reference Specification Section _____

Remedial Action Construction
Yeoman Creek Landfill Superfund Site



GEOSYNTEC CONSULTANTS

55 W. Wacker Drive, Suite 1100
Chicago, Illinois 60601

TO: Matt Ohl
U.S. Environmental Protection Agency
77 West Jackson Blvd
Mail Code SR-6J
Chicago, Illinois 60604

TRANSMITTAL

- | | | | |
|--|---|---|--|
| <input checked="" type="checkbox"/> ENCLOSED | <input type="checkbox"/> PLAN | <input type="checkbox"/> DRILLING LOGS | <input type="checkbox"/> APPROVED |
| <input type="checkbox"/> UNDER SEPARATE COVER | <input type="checkbox"/> COST ESTIMATE | <input type="checkbox"/> TEST RESULT | <input type="checkbox"/> APPROVED AS NOTED |
| <input type="checkbox"/> MESSENGER | <input type="checkbox"/> PRINTS | <input checked="" type="checkbox"/> DOCUMENTS | <input type="checkbox"/> RESUBMIT |
| <input checked="" type="checkbox"/> FIRST CLASS MAIL | <input type="checkbox"/> SPECIFICATIONS | <input type="checkbox"/> CONTRACTS | <input type="checkbox"/> RETURN |
| <input type="checkbox"/> SPECIAL DELIVERY | <input type="checkbox"/> SHOP DRAWINGS | <input type="checkbox"/> FOR APPROVAL | <input type="checkbox"/> CORRECTED PRINTS |
| <input type="checkbox"/> AIR MAIL | <input type="checkbox"/> CD / DISKETTE | <input type="checkbox"/> FOR YOUR USE | <input type="checkbox"/> FOR COMMENT |
| <input type="checkbox"/> FEDEX | <input type="checkbox"/> PHOTOS | <input type="checkbox"/> AS REQUESTED | |

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1		Sept. 2002 Groundwater Monitoring Report	11/21/02

Signed: _____
Date: _____